

## REPORT DOCUMENTATION PAGE

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Enclosure (6)

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DEPARTMENT OF THE NAVY  
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION  
PATUXENT RIVER, MARYLAND 20670-5304

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From: Team Leader, Technical Publishing Team, Naval Air Warfare Center Aircraft Division, 22541 Millstone Road, Patuxent River, MD 20670-5304

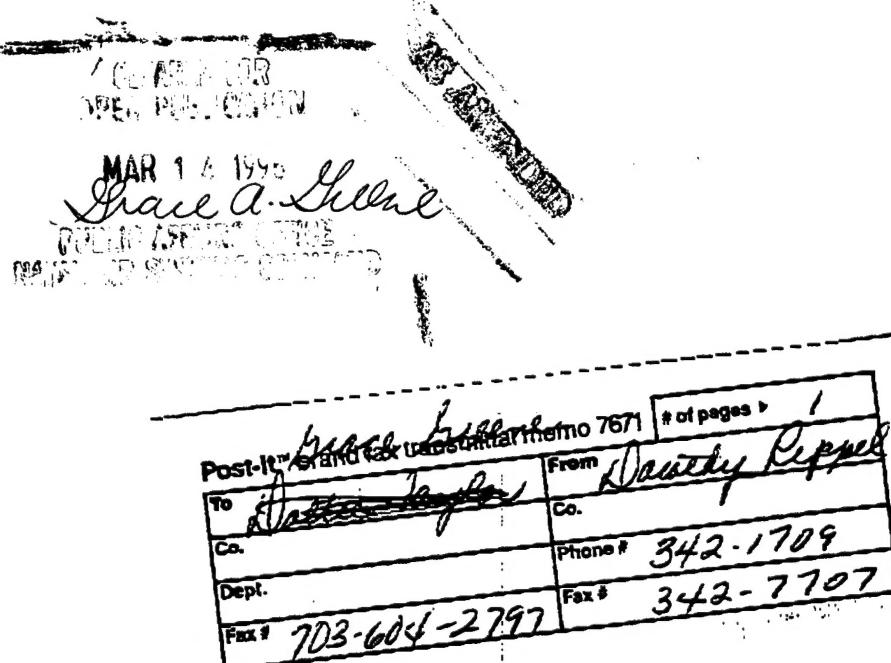
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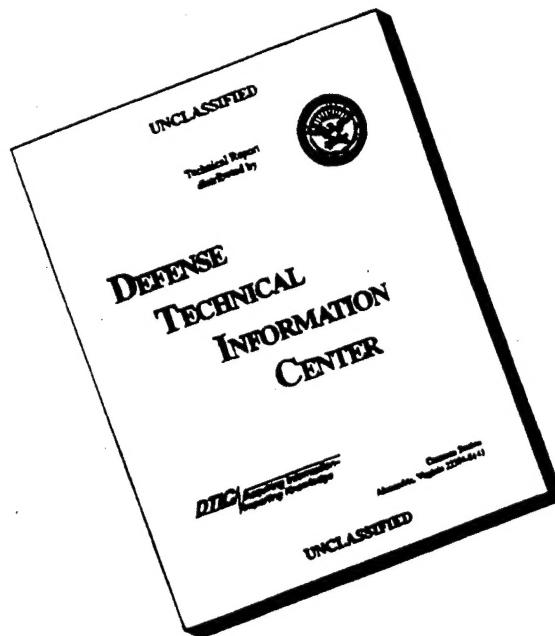
Encl: (1) Flight Test Update - F/A-18E/F Super Hornet (Slides) (2 copies)  
(2) F-18E1 Arrival at NAWCAD Patuxent River (Video Tape)

1. Enclosures (1) and (2) are forwarded for review and approval for public release.
2. Enclosures (1) and (2) will be presented at the Society of Experimental Test Pilots, San Diego, California on 15 March 1996. The authors of enclosure (1) are LCDR T. C. Gurney and Mr. Jim Sandberg. The proposed NAVAIR reviewer is Mr. Willie Smith (PMA265-F1). Request approval by ASAP or no later than 13 March 1996.
3. Please contact Dorothy Reppel at DSN 342-1709 or commercial (301) 342-1709 should you have any questions.

*Karen L. Brown*  
KAREN L. BROWN



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# Flight Test Update



GPI6234X001 CVS



# The Society of Experimental Test Pilots

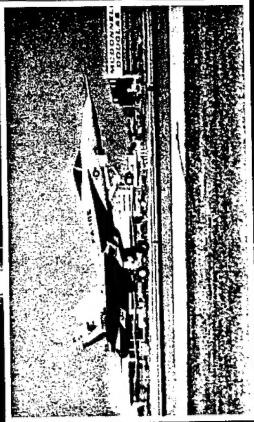
## 26th San Diego Symposium March, 1996



Mr. Jim Sandberg, NGC (AF)  
LCDR Tom Gurney, USN (M)

GP62300006.CVS

- Program History
- Aircraft Description
- Flight Test Program
- Lessons Noted



# Continues Hornet Evolution

## *Additional Improvements*

- APG-73 Radar Upgrade
- Engine Upgrade
- Reconnaissance

## *F/A-18C/D Night Strike*

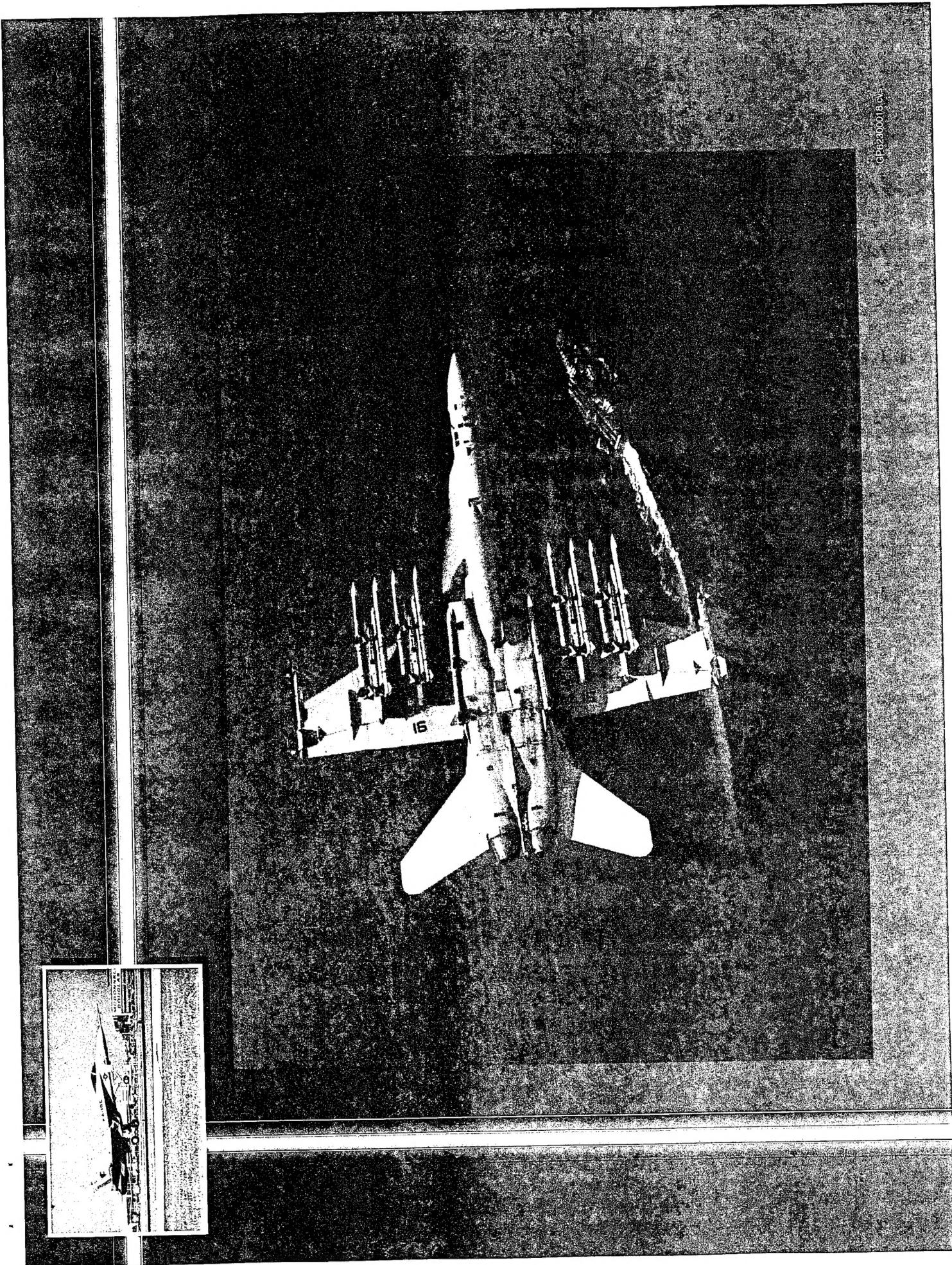
- Night/Adverse Weather Capability
- Deliveries Began October 1989

## *F/A-18C/D*

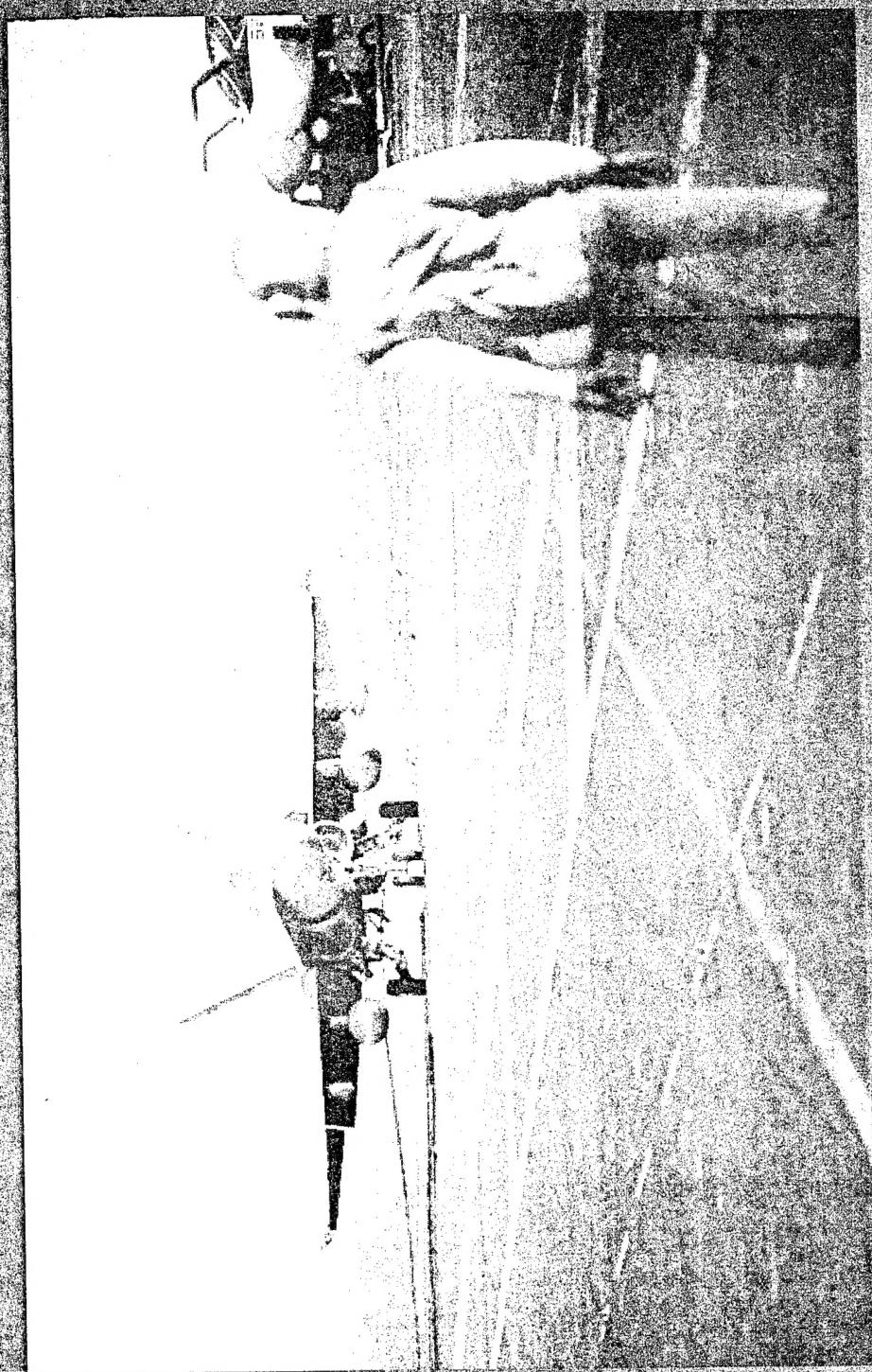
- Advanced Weapons
- Improved Systems
- Fleet Deliveries September 1987

## *F/A-18A/B*

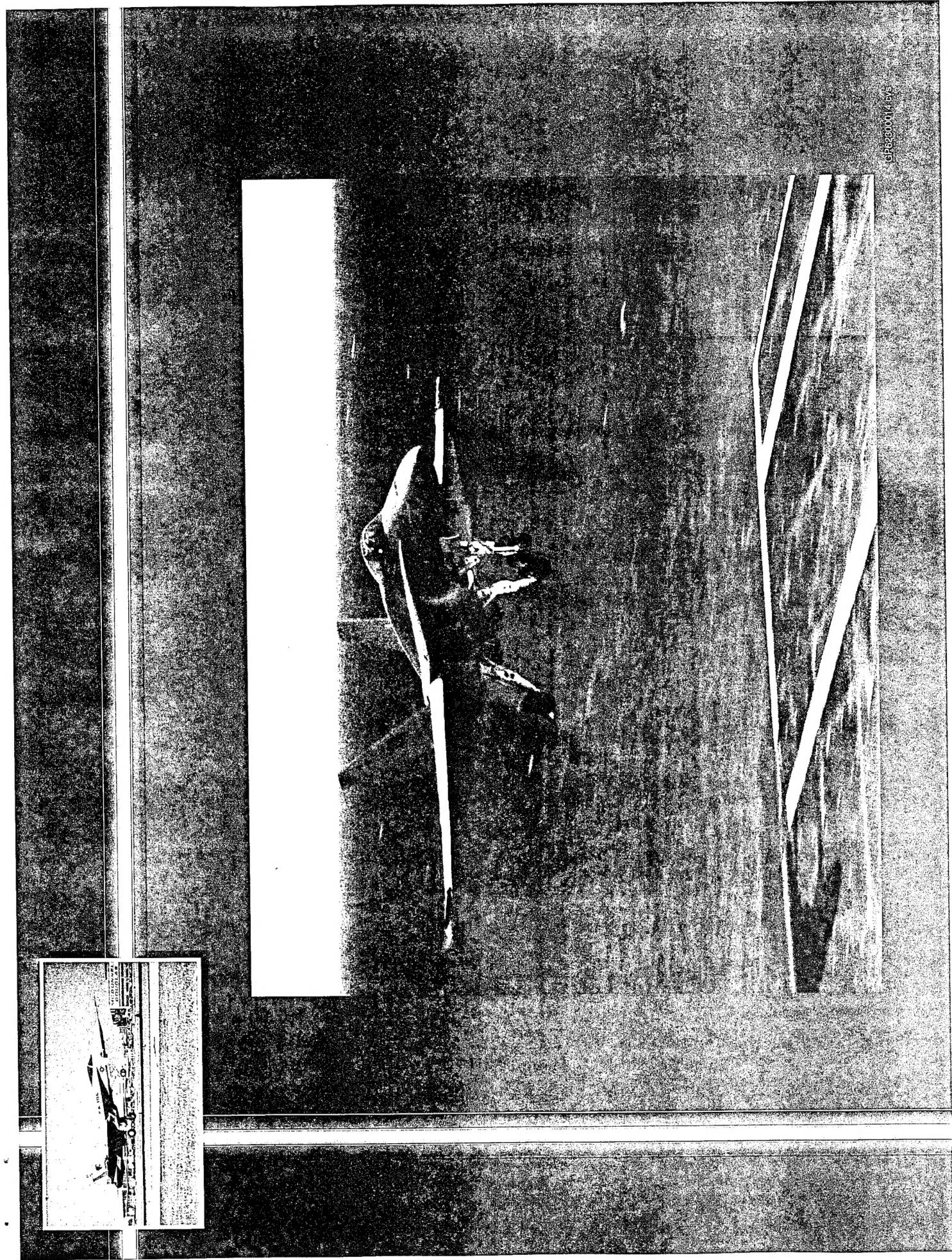
- Replaced A-7 and F-4
- First Flight November 1978



CP6230001 B.CS

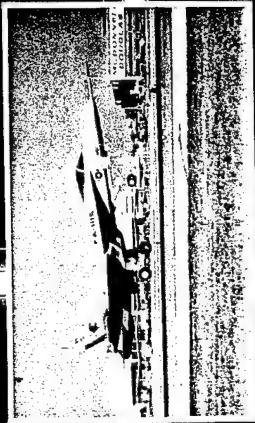


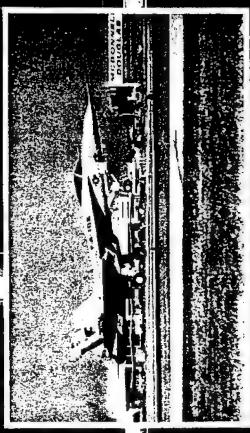
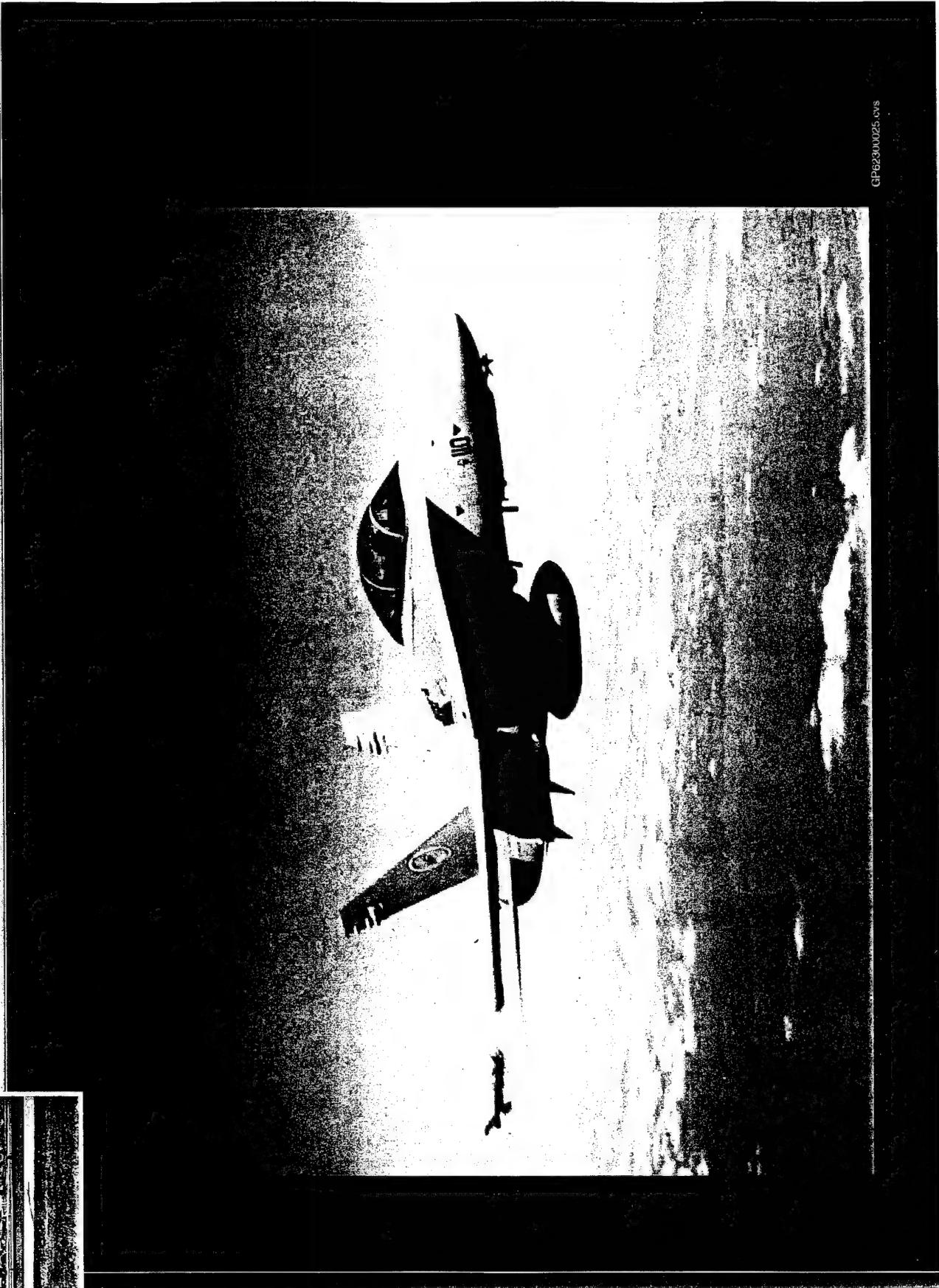
CFP20002061





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# Continues Hornet Evolution

## *Additional Improvements*

- APG-73 Radar Upgrade
- Engine Upgrade
- Reconnaissance

## *F/A-18C/D Night Strike*

- Night/Adverse Weather Capability
- Deliveries Began October 1989

## *F/A-18C/D*

- Advanced Weapons
- Improved Systems

• Fleet Deliveries September 1987

## *F/A-18A/B*

- Replaced A-7 and F-4
- First Flight November 1978

## *F/A-18E/F*

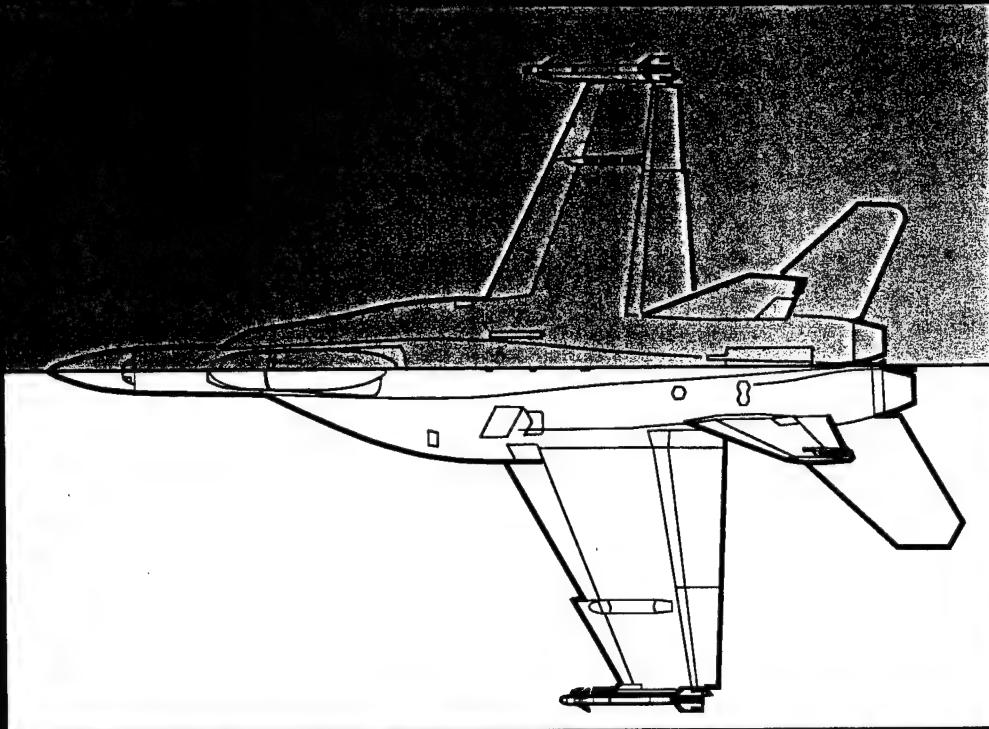
- Longer Range
- Payload Flexibility
- Increased Payload Recovery
- Improved Survivability
- Growth Margin



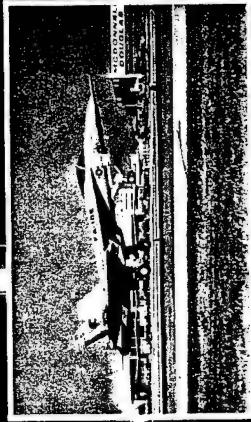
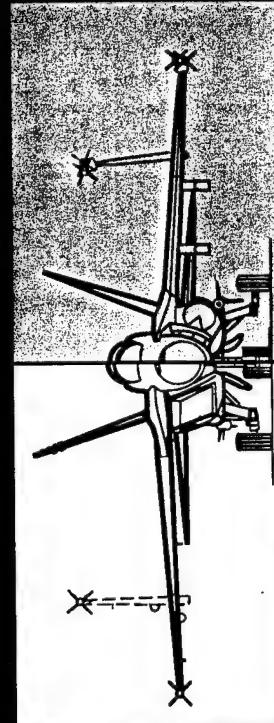
## *Maintaining Outstanding Carrier Suitability and Growth Potential*

# F/A-18E Characteristics

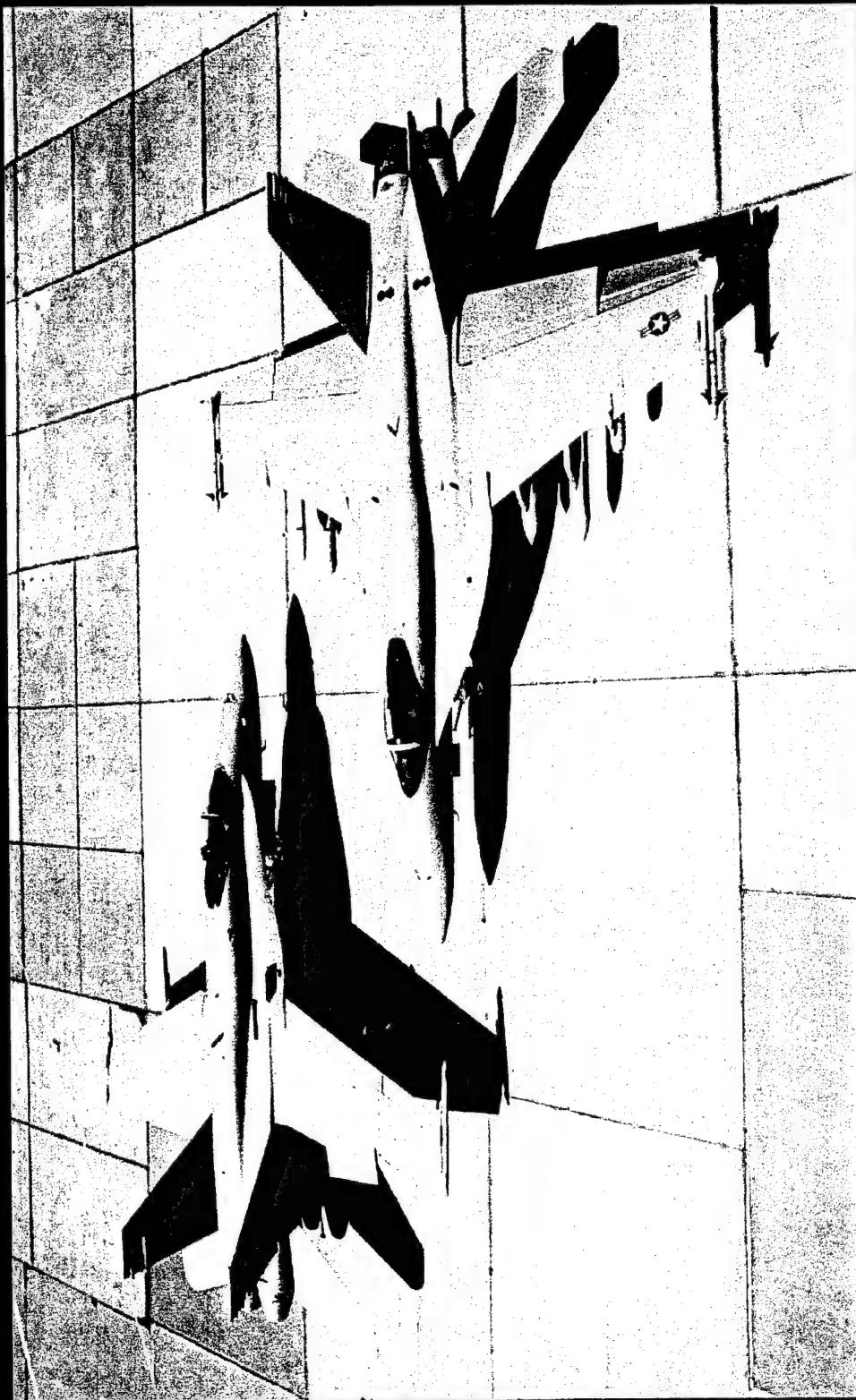
F/A-18E	500 sq ft	46.5 sq ft
Wing Area		
Weight		
Empty	30,564 lb	23,332 lb
Max TOGW	66,000 lb	51,906 lb
Takeoff (Fighter Escort)	47,874 lb	37,797 lb
Carrier Landing	42,900 lb	33,666 lb
Propulsion		
(2) F404 Derivative Turbos		
Engine	F414 44,000 lb	32,000 lb
Total Thrust Class (SLSU)		
Fuel (JP-5)		
Internal	14,460 lb	10,860 lb
External		
330 gal. Tanks	6,730 lb	6,730 lb
480 gal. Tanks	9,790 lb	-
Design Load Factor (USN)	7.5 g	7.5 g



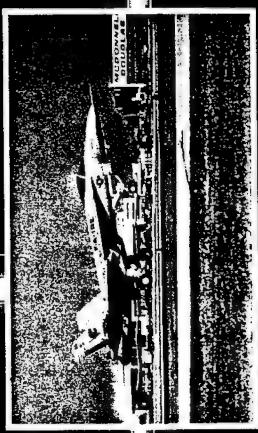
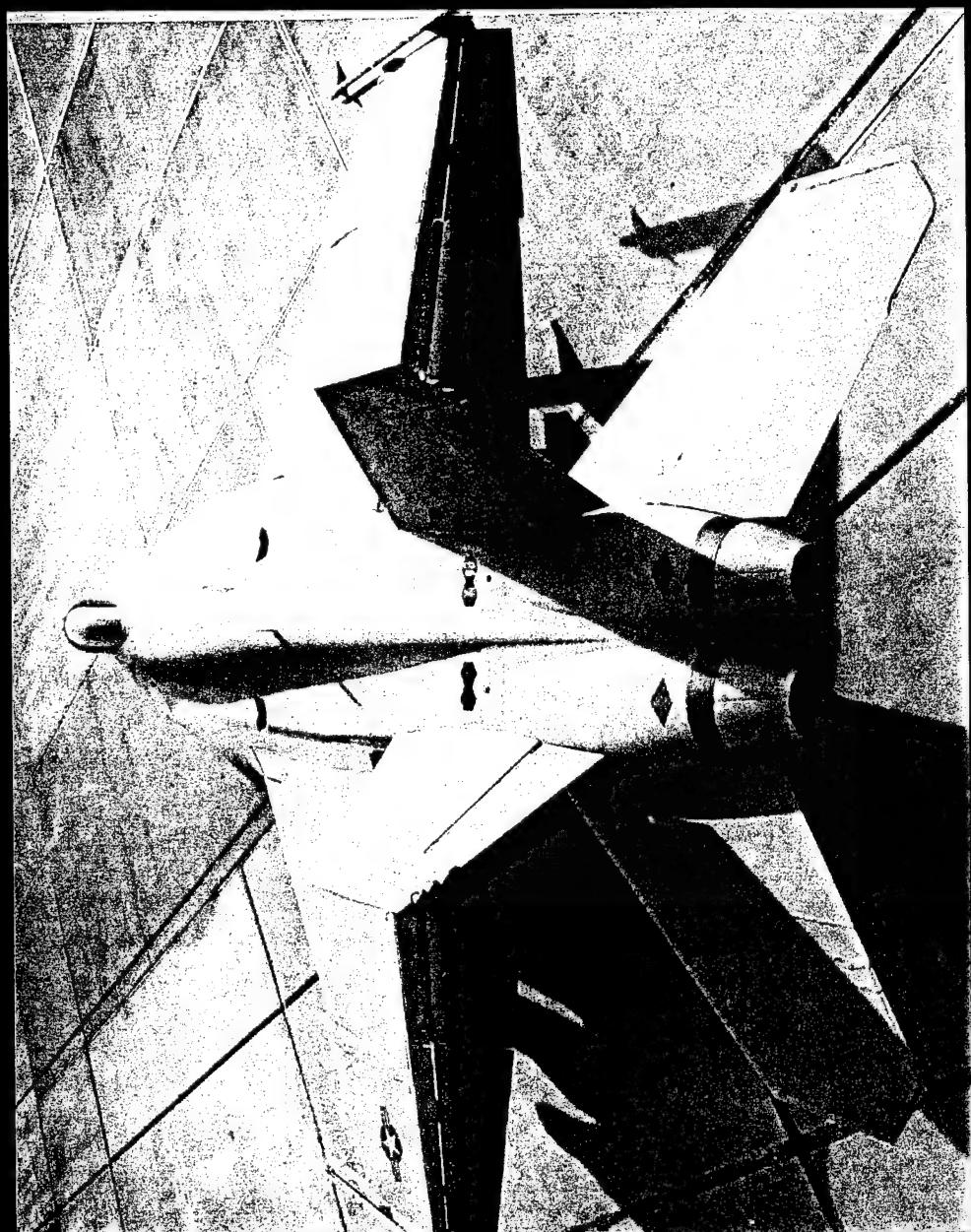
GPO 2000-00012 cv5



# C-E Comparison



GPI2000008.cvs



GPG23000110.GVS

# F/A-18E/F Features

Additional 3,600(E)/3,385(F) lb Internal Fuel

Two Additional Wing Store Stations

Dual Pressure Hydraulics

Improved Inlet Design

Crew Station Upgrade

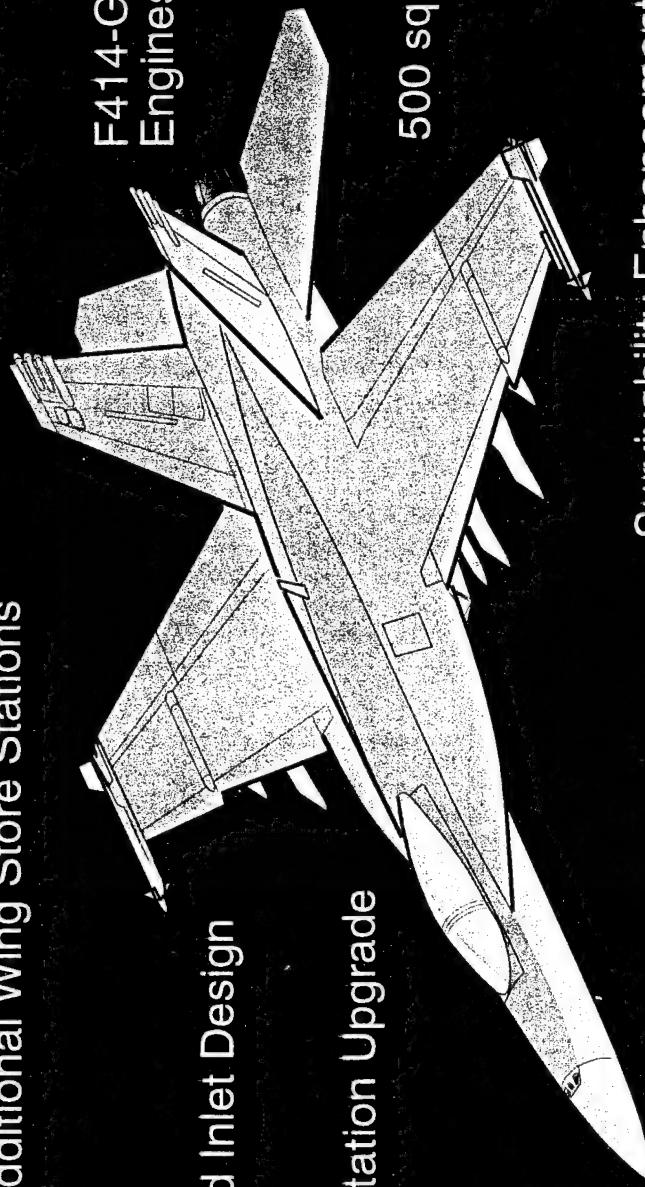
500 sq ft Wing

Survivability Enhancements

Aerial Refueling Store Compatibility

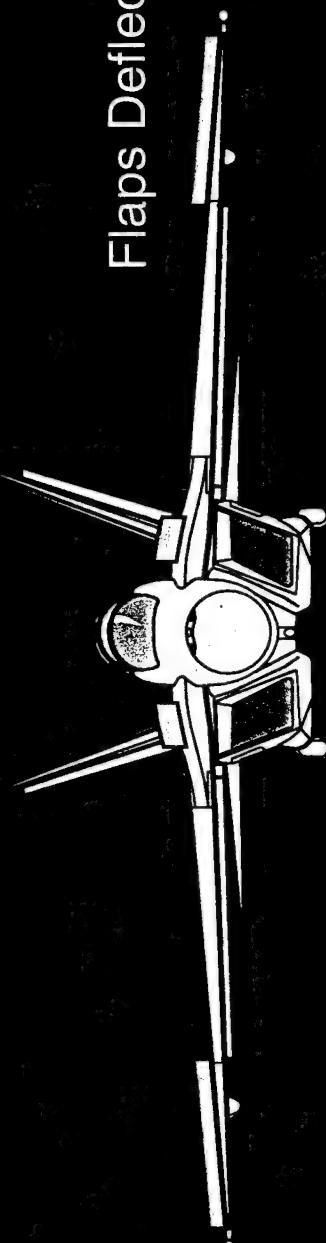
Increased Composite Usage for Fuselage Skins

GPB2300013cvs

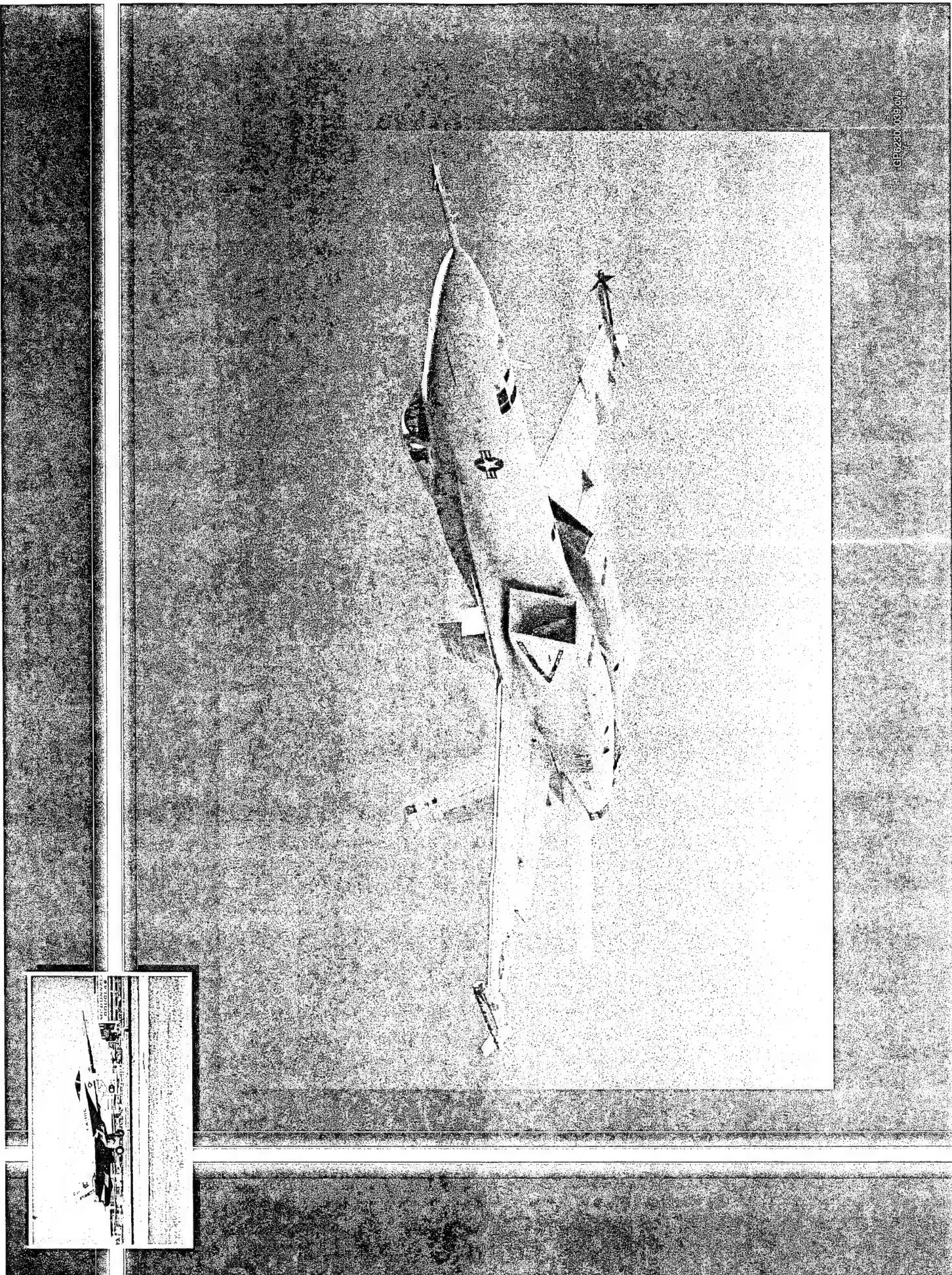


# Alternate Speedbrake Mechanization

Primary Flight Controls Deflect LEX Spoilers Deflect

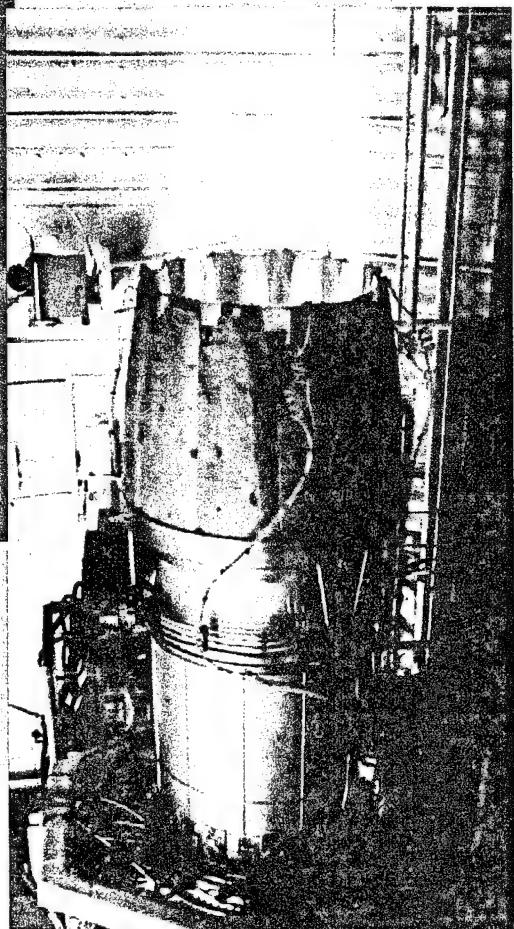
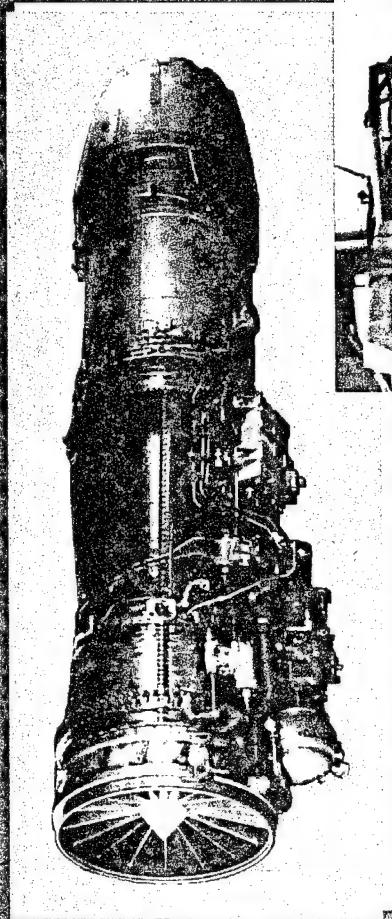


Mechanization Provides Roll and Yaw Command Priority Logic



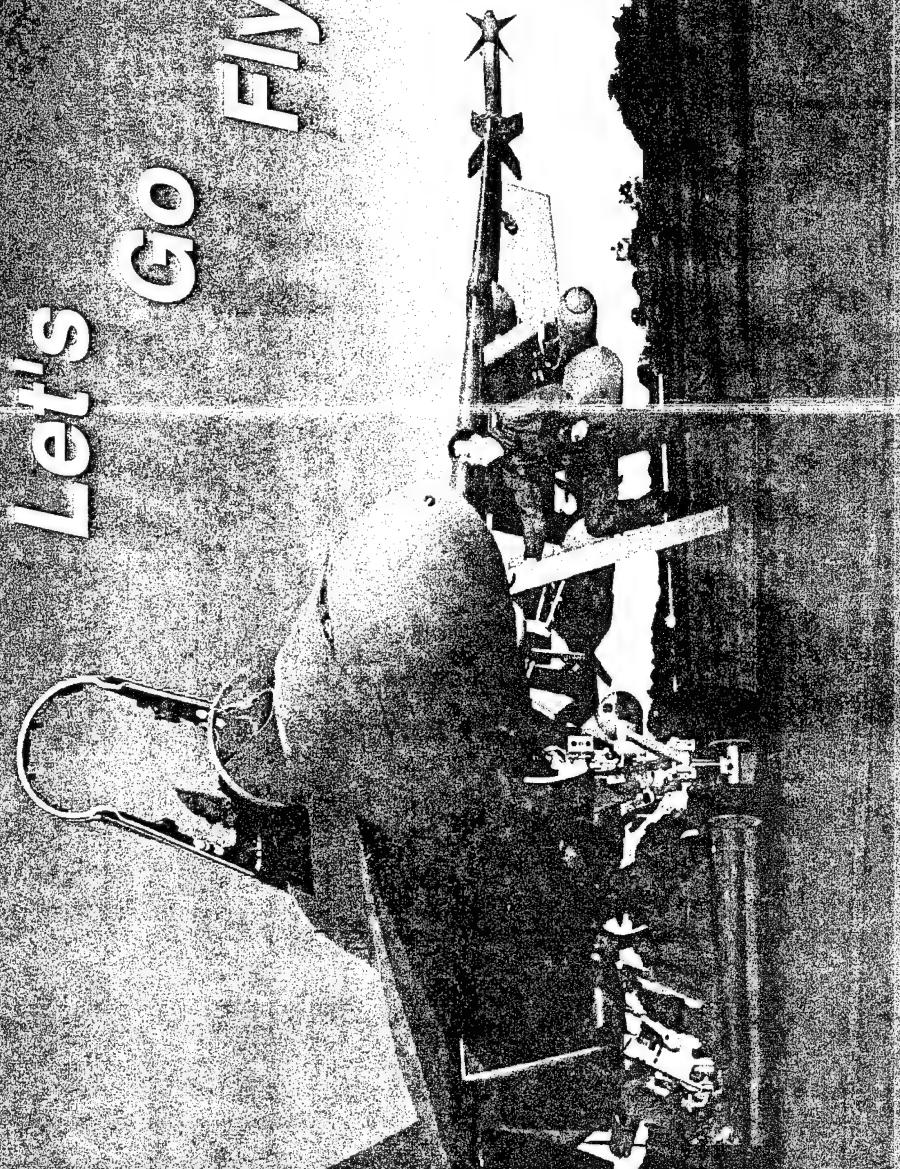
CFB 300009 GVS

# F414-GE-400 Turbofan Engine

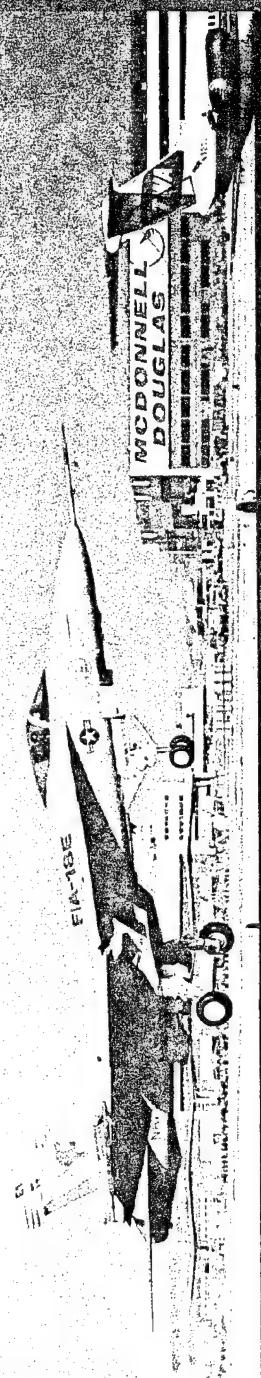


GP23001975

Let's Go Fly

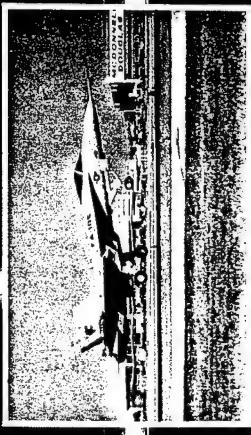
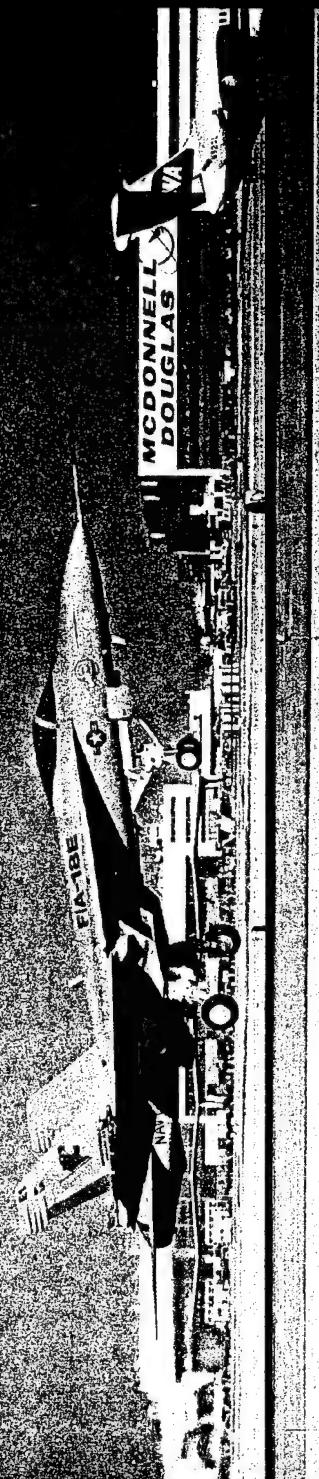


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CH2000000101

GP62300040 cys

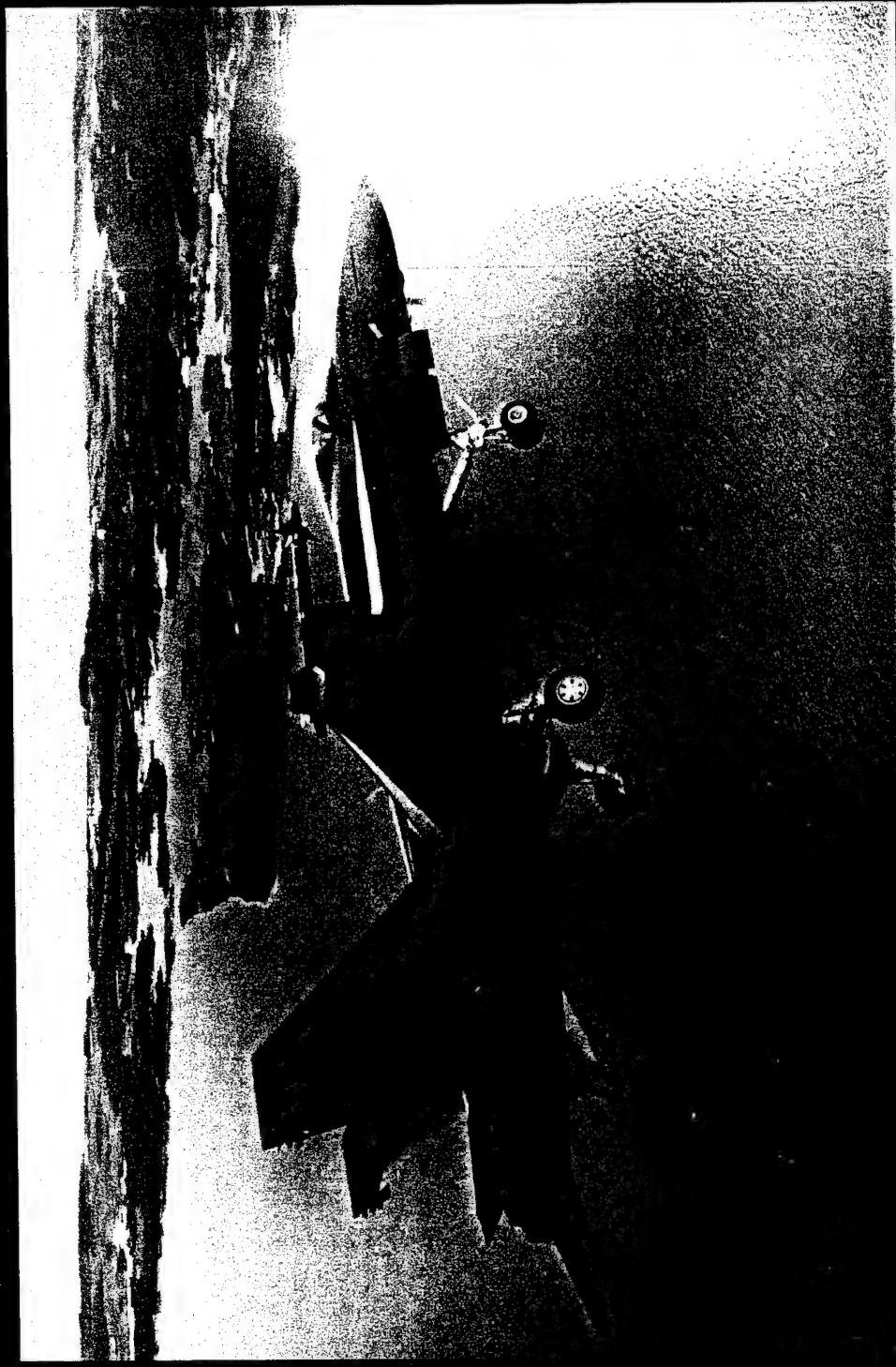




## E/F Flight Test Status (3/1/96)

- **E-1** 6 Flights 8.8 hr
- **E-2** 6 Flights 9.0 hr

- Both Aircraft @ Pax - Ready to Test
  - E-1 Air Data/Envelope Expansion
  - E-2 FQ/Propulsion/IFR



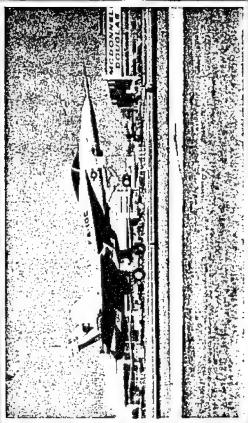
GP623000333 CVS



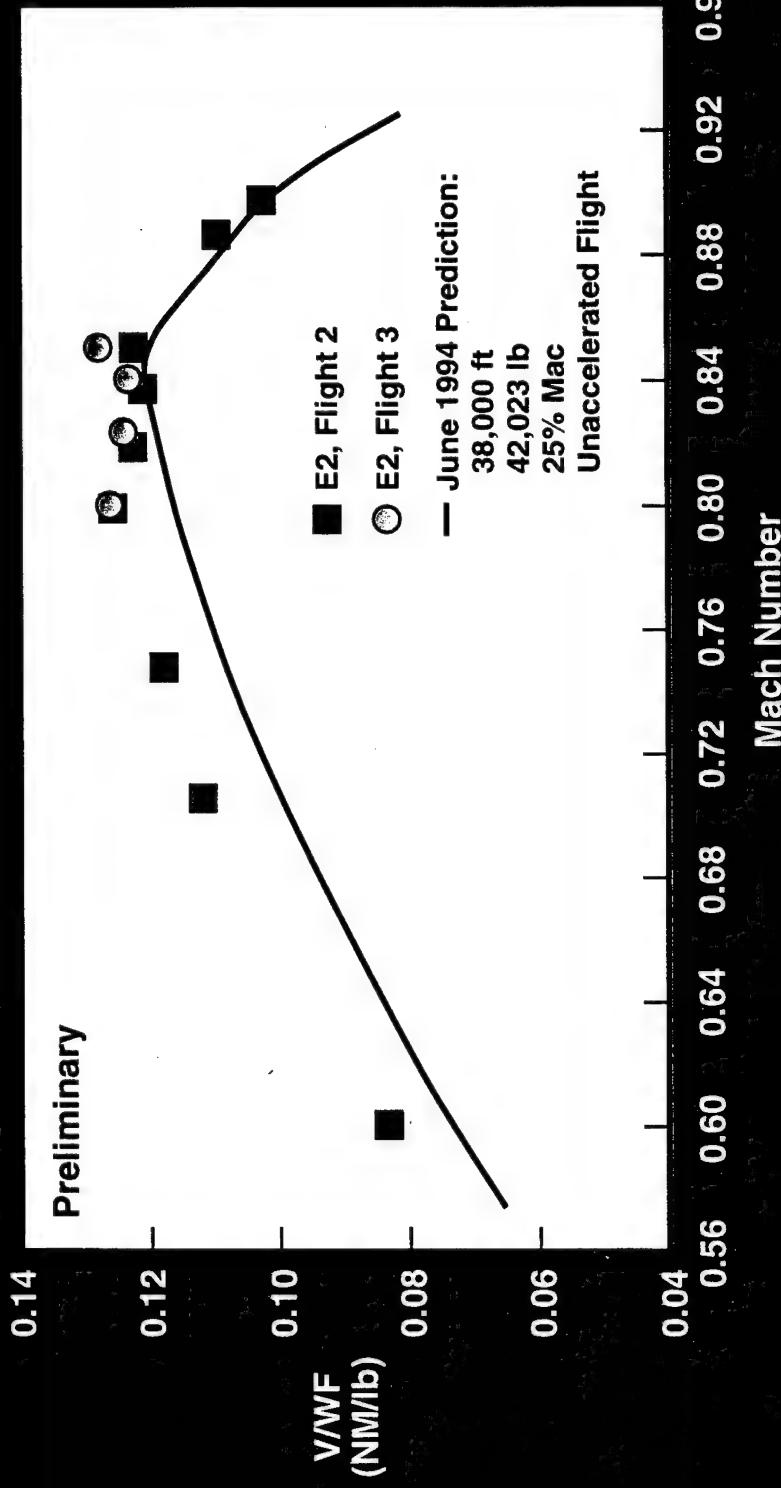
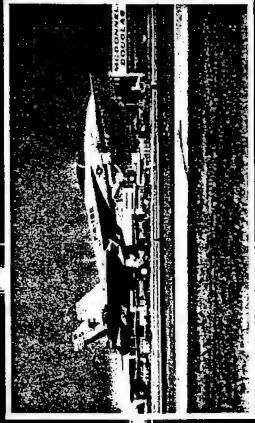
0000032.cws

## So, How Does It Fly?

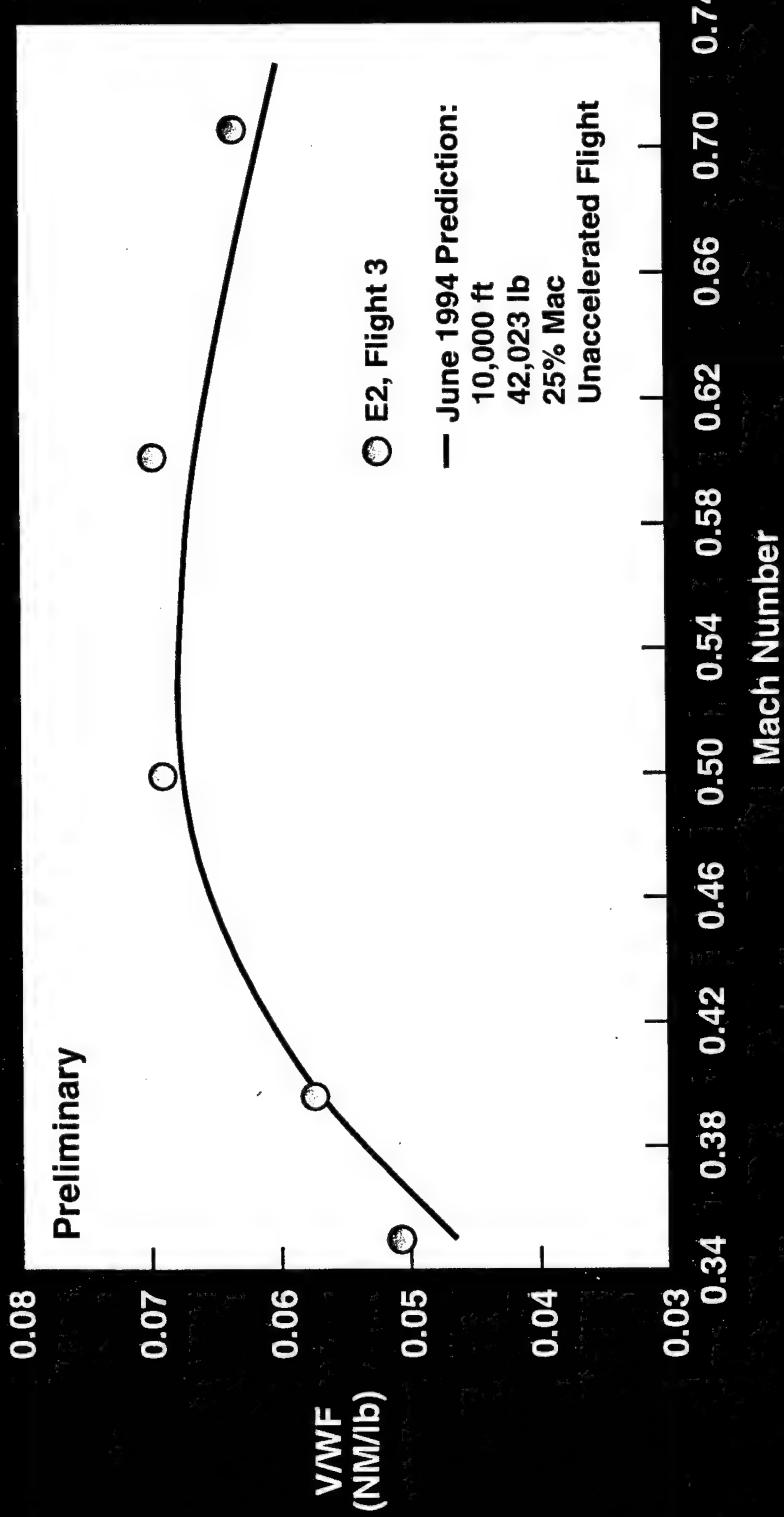
- Handling Qualities
  - Up and Away
  - Landing
  - No Major FCS Design Issues
- Engine
  - Precise Control
- Performance
  - "Data On the Line or Above"  
Longer Test Missions



# Raw Uncorrected EOA Cruise Specific Range @ W/Delta = 206,238 (2) AIM-9 Configuration



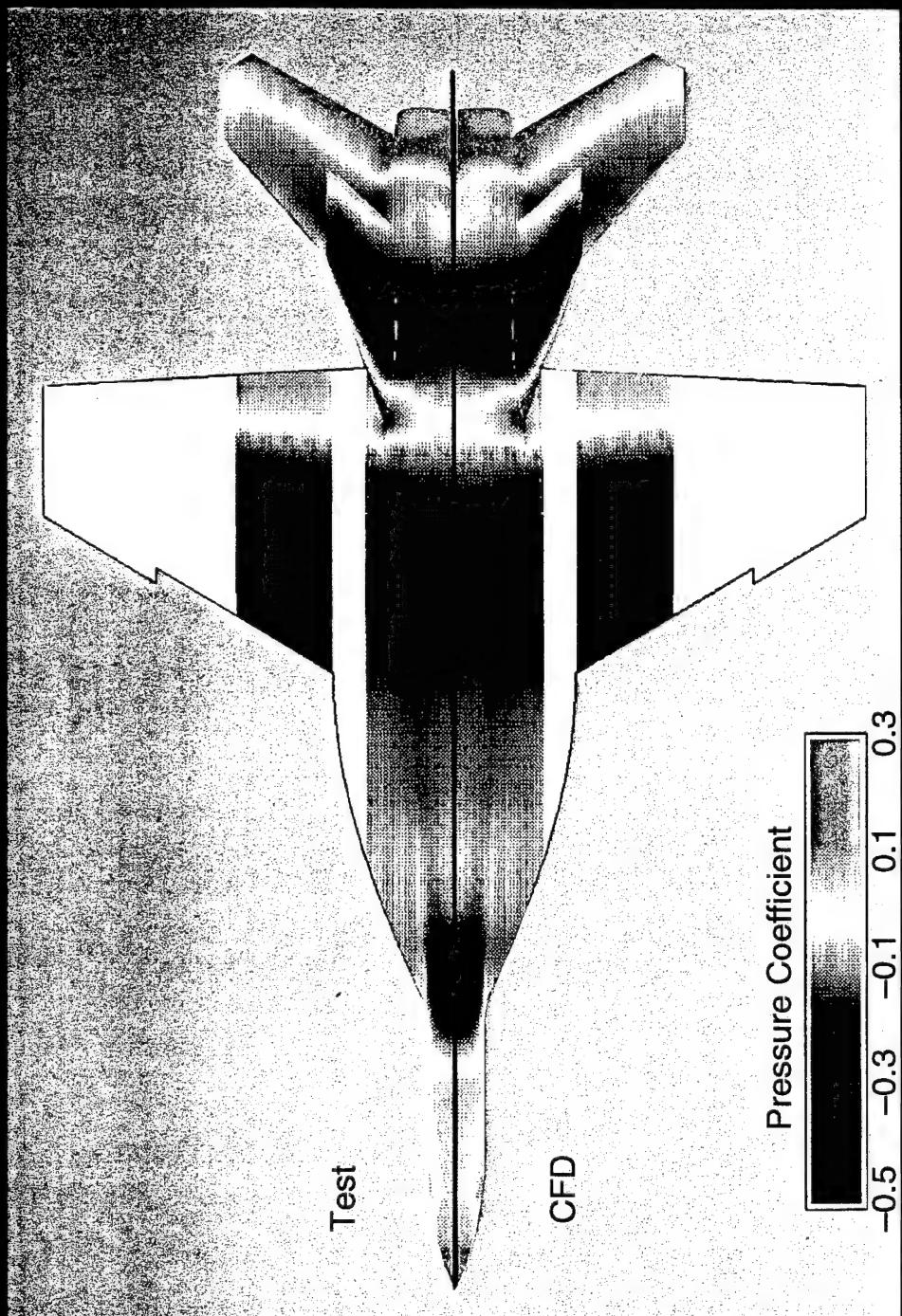
# Raw Uncorrected EOA Cruise Specific Range @ W/Delta = 61,107 (2) AIM-9 Configuration



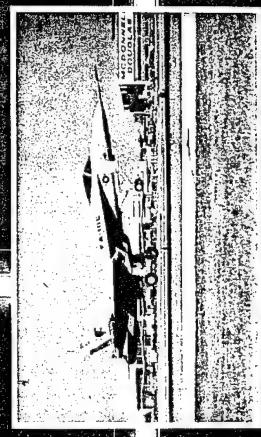
# Test Data Validates CFD

F/A-18E Sting and Distortion/Jet Effects Model

Mach 0.85,  $\alpha = 3.5^\circ$



GP02300027 crs



# Comparisons



Landing

42,000 lb CW  
133 KIAS App SPD

Climb

35,000 lb CW  
146 KIAS App SPD

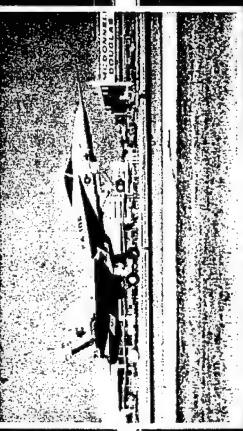
Max Power Climb

High Altitude  
Maneuvering

Buffet Free

Afterburner  
Required

In Buffet



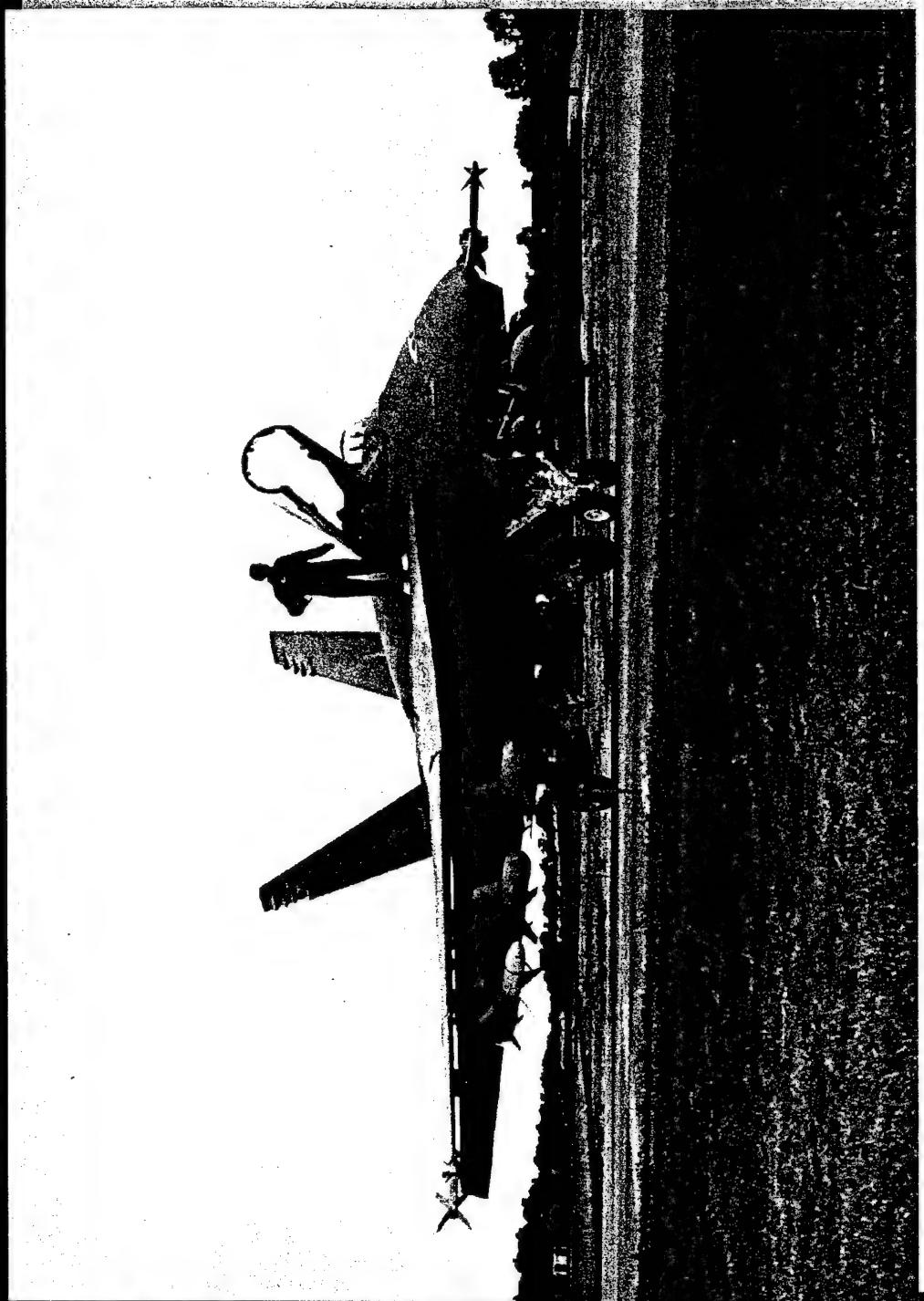
GP62300034 cv5

# F/A-18E/F

## Aircraft Test Program Summary

Aircraft	1995			1996			1997			1998		
	O	N	D	J	F	M	A	M	J	A	S	O
E1 (350)												
E2 (345)												
F1 (300)												
E3 (265)												
E4 (285)												
E5 (258)												
F2 (162)												

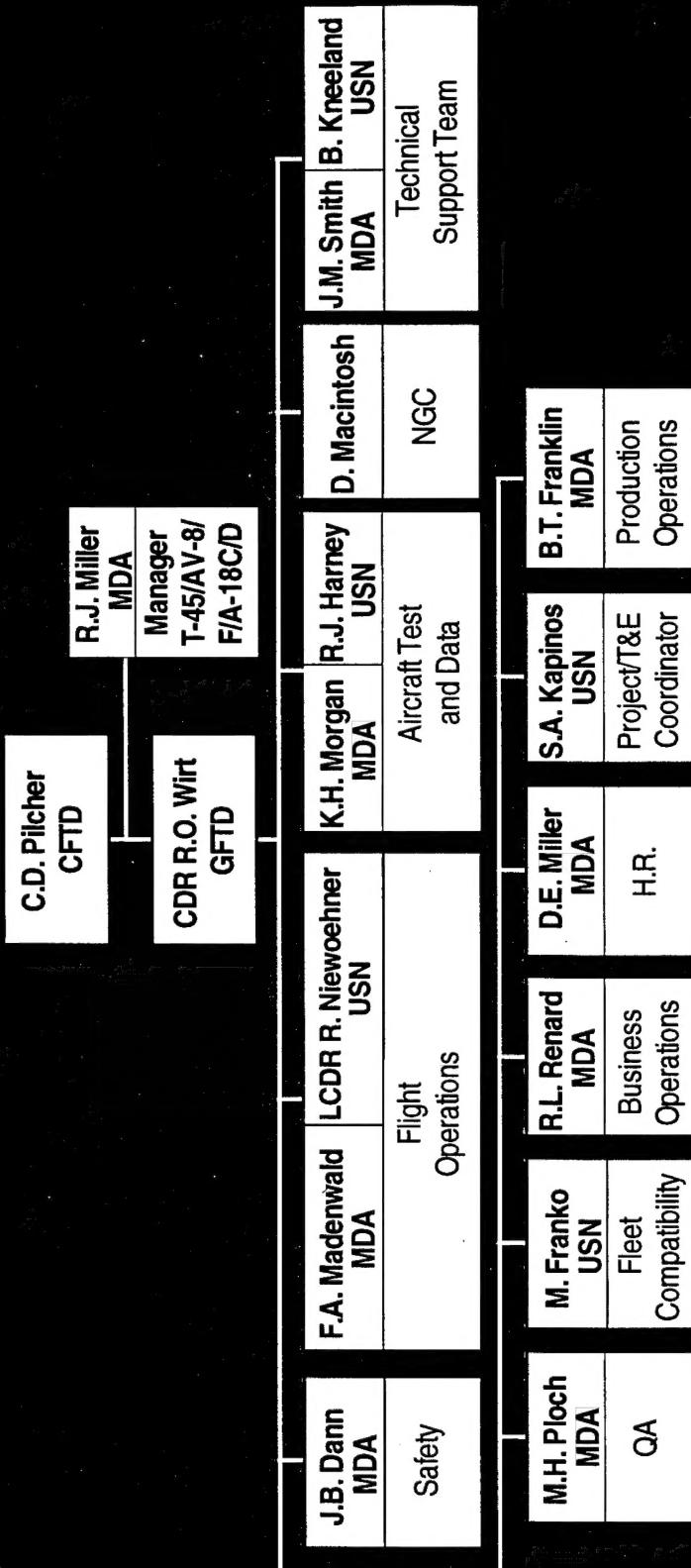
# Integrated Test Team



GP62300022.cvs

# F/A-18E/F Flight Test

## Integrated Test Team Organization

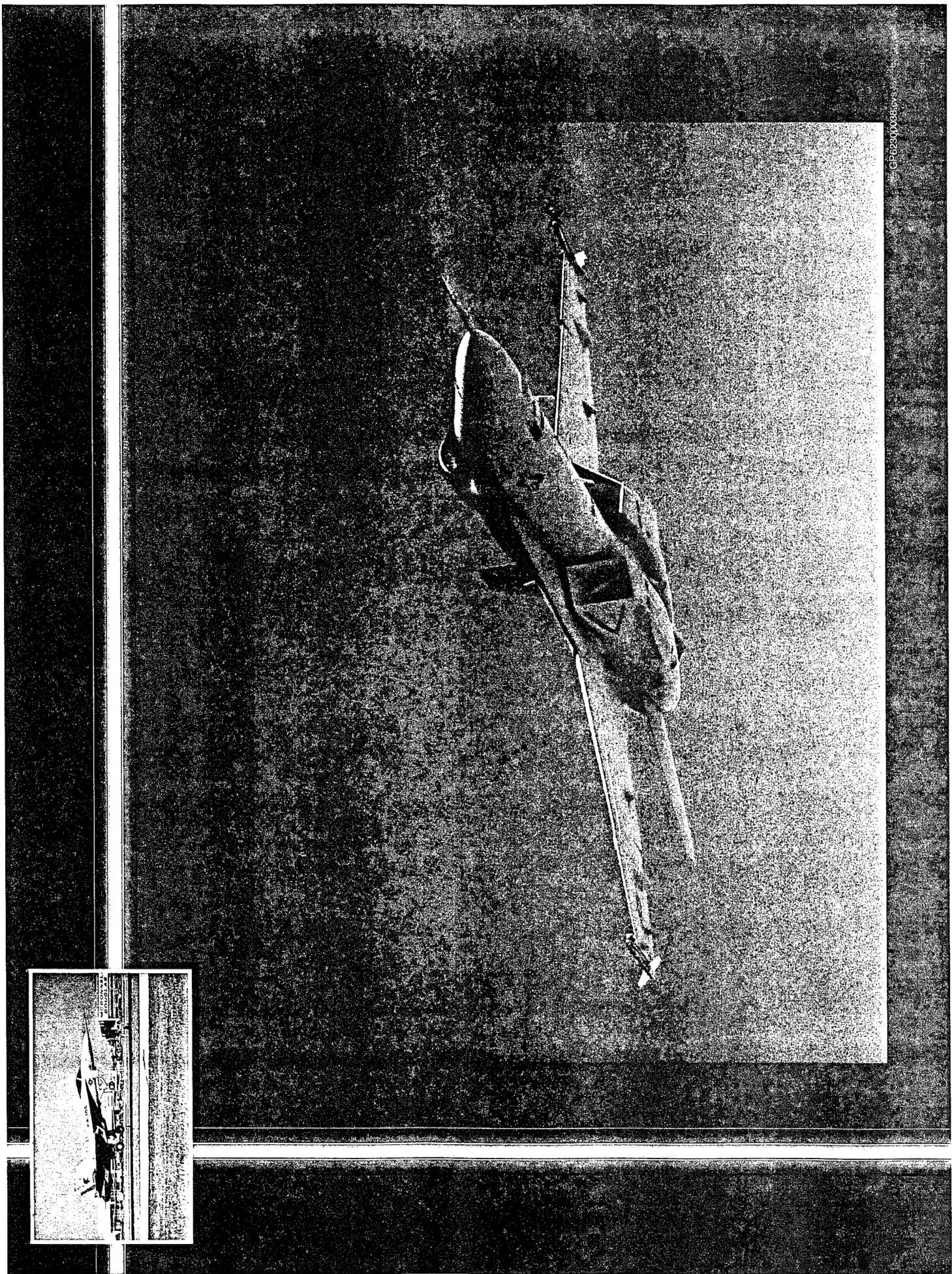


GI62000029 evs





0623000Y010



CH6300088 GPS